



Cluster Development Discussion

Is open space managed for water quality benefits?

For water quality benefits, a maximum of the open space should be in forest, trees, shrubs, and meadows. The townships vary in their requirements. Upper Dublin allows only conservation uses and passive recreation. Whitmarsh allows up to 50% of the common open space to be in active recreation such as golf courses and play fields. Whitmarsh, Springfield and Whitpain should review Upper Dublin's open space management requirements, and consider strengthening the management guidelines for more water quality benefits. This review should consider the balance between excluding undevelopable land from counting toward open space requirements and managing the open space for water quality benefits.



What are the submittal and review procedures?

Roundtable members were generally comfortable recommending that an optional, but strongly encouraged, sketch plan be codified. Municipalities should compile an inventory of sensitive areas and drainage conditions.

What is the effectiveness of cluster development?

Cluster or conservation subdivision ordinances have been demonstrated to provide environmental benefits. Do they also benefit developers and landowners? A literature review indicated that well-designed cluster developments are as profitable as standard developments, and often sell faster because of the open space amenities. Another aspect of effectiveness is whether cluster ordinances provide meaningful incentives for developers, or whether they drive new development to townships with weaker ordinances.





“Impervious Creep” Recommendations

“Impervious Creep” refers to the incremental addition of impervious surfaces such as asphalt, concrete, or rooftop. Examples are an addition to a home, widening a driveway, or enlarging a parking lot. These projects may not undergo the same thorough review of stormwater impacts as a larger project, but cumulatively, they can cause a substantial increase in runoff over time. Each additional 500 square feet (SF) of impervious surface (approximately the size of a two-car garage), would yield 997 gallons of runoff in a two-year 24 hour storm.

Recommendations to Manage “Impervious Creep”

Stormwater management should be required for any increase of impervious surface in the Wissahickon Creek watershed of over 200 square feet.

- Surface infiltration should be attempted only on soils that are at least moderately well-drained according to NRCS Soil Surveys.
- If the soils are not mapped by NRCS, or if they are underlain by carbonate geology, then soil testing should be conducted.
- Site-specific soil testing should include soil profile description, drainage classification, and permeability testing that reports saturated hydraulic conductivity. Percolation testing is not adequate.
- While soil amendment to increase permeability can sometimes be effective, it should only be attempted in consultation with a professional soil scientist or geologist.

Standardized or pre-designed infiltration BMPs should be provided by the Townships, and permitted on projects of less than 1000 square feet. Whitpain Township’s website provides a good example.

Each municipality should have a parcel-based system to track and enforce maintenance for stormwater BMPs, particularly on these small projects.

Any fee-in-lieu should be dedicated to implementation of stormwater BMPs, not to administration of the program, and should be an amount adequate to implement off-site BMPs to replace the infiltration capacity lost due to the new impervious surface.



“Impervious Creep” Recommendations

Tracking System

Whitpain Township has a GIS system for tracking BMPs as part of an overall permit management and land use system. The ArcView system is linked to parcel data provided by Montgomery County Planning Commission. It was started in 2000, with many data layers added over the years. Total cost to date is probably \$70-80,000. The GIS system allows the engineering staff to convert data to Excel, show BMPs on spread sheets, and submit data to PA DEP as part of the MS4 annual report.

Whitpain was ahead of the curve— PADEP’s draft general permit for MS4 Phase II municipalities requires a system for tracking and ensuring maintenance of all stormwater BMPs. Pennsylvania Environmental Council is currently piloting a nationally-tested MS4 and BMP tracking and reporting system, in collaboration with StormwaterPA and engineering firm CBI, Inc. Upper Dublin is one of the nine pilot municipalities.



Widened intersection contributes to “impervious creep”



“Impervious Creep” Discussion

The four townships all have regulations to manage the stormwater impact of new impervious surfaces, however the requirements vary widely. Each township allows an exemption from the requirements when the additional impervious surface is below a certain size. In Upper Dublin, Whitpain, and Springfield Townships, additions ranging from 200 to 400 square feet are exempt. In Whitpain, this exempted amount increases with larger parcel sizes, up to 3000 sq ft for a five-acre parcel.

In Whitemarsh, projects up to 1000 square feet are exempt from stormwater management, a difference attributed to relatively large lots in the Township. While Whitemarsh Township staff recognize the benefits of a lower threshold, the 1000 square feet threshold continues because a percolation test and engineered plan are required for any stormwater BMP. This can cost several thousand dollars.

If the proposed new impervious surface is greater than the specified exemption, then stormwater management BMPs must be installed. Each township has slightly different

requirements for projects that are above the exemption limits. Whitpain, Upper Dublin, and Springfield handle small projects through the building permit rather than through the land development process. Whitpain requires a percolation (perc) test, but then offers a

“Adequately addressing stormwater management problems will be neither quick nor easy. It will require a long-term, sustained effort on the part of this Township and its neighbors...”

Whitemarsh Township Stormwater Task Force
January, 2006

standard infiltration trench specification, as well as rain garden and cistern designs. Whitpain also has a fee-in-lieu option. Upper Dublin does not require a perc test. They make a field decision on soil quality, and may require amended soils. In Springfield, a fee-in-lieu can be accepted if the perc test fails. The fees collected would be used for stormwater management in township. However, no fees have been collected because infiltration has been possible on all sites.

This wide variation in practices led the Roundtable members to seek additional technical information. Russell Losco of Lanchester Soil Consultants was hired to provide a sound science-based strategy for mitigating the runoff caused by these small projects. His report is the source of the first recommendation on managing impervious creep.





Commercial Redevelopment Recommendations

Commercial and industrial zoning districts are the most intensely developed land uses within a community. Expansive rooftops and parking lots channel runoff through municipal storm drains to nearby streams. Many commercial areas were built with no stormwater management. Others were built with basins designed to control only the largest storms, passing runoff from smaller rainfalls right through. This report targets code updates for commercial districts because of the relatively quick redevelopment cycle for commercial property. Municipal leaders can require that runoff volume from these sites be reduced by updating codes to improve stormwater management and add to a green infrastructure network when commercial sites are redeveloped.

Although retail and mixed-use land use take up less than 3% of the land area in the Roundtable townships, it has significant impact on stormwater runoff volumes. Even dense residential areas often include lawn areas and landscaping that disconnect impervious cover and allow some infiltration. But the impervious buildings, parking, and driveways of commercial areas can cover more than 70% of a tract. Not only is impervious cover high, it is interconnected within each parcel and across parcels, offering no opportunity for infiltration. Further, most commercial developments in this part of Montgomery County have no stormwater management BMPs in place because they pre-date recent advances in stormwater management. Therefore, any new stormwater management in these areas will be a step in the right direction and have a valuable impact on water resource protection.



Trees between curb and sidewalk to absorb runoff

“As a local elected official, I appreciate how the Roundtable recommendations have taken all perspectives into account.”

Leslie Richards, Vice-Chair
Whitemarsh Township Board of Supervisors

More detailed recommendations are available on the PEC website: www.PECA.org



Commercial Redevelopment Recommendations

Commercial Market Analysis

Past real estate and development decisions have resulted in underutilized commercial space in some areas. Stores and offices are vacant and parking lots are empty. Prior to approving new commercial buildings, municipalities should conduct (or require from developers) a market analysis to inventory existing commercial space and evaluate future demand. Information from such a study could be used to encourage property owners to redevelop existing space rather than build new.

Parking Study

Ownership of parking facilities is fragmented within each commercial district. The townships should consider parking studies to determine where redevelopment will likely occur, which areas are over-parked, and where additional parking and shared access will be needed. As several commercial areas cross municipal boundaries (i.e. Flourtown and Fort Washington), townships should cooperate on such studies. These studies could also support township efforts to create village or TOD overlay districts.

Sketch Plans & Site Visits

Pennsylvania municipalities cannot require sketch plans. However, most townships list the sketch plan as an optional step in the land development review process. The sketch plan is an invaluable step to any review process. Further, townships should begin to make it common practice for planning commission members and elected officials to visit sites with the developer. By including the sketch plan and site visit in the plan review process, township officials have a more meaningful opportunity to comment on site development before applicants invest in an expensive design that they are then unwilling to modify.



Missed opportunity for bioretention and street trees

SPRINGFIELD RECOMMENDATIONS

Subdivision & Land Development Ordinance

Section	Recommendations to Encourage Commercial Redevelopment
Cartway width (95-10)	The required cartway width for even the smallest streets in the township is 30 feet. To put this in perspective, the two lanes that make up the northbound side of the Turnpike are only 24 feet wide. Especially in mixed use and residential areas, the township should consider dropping this to 24 feet or 26 feet to increase safety by reducing travel speeds in pedestrian areas and reduce impervious cover.
Street trees (95-11.I.2)	The township has an excellent standard of one street tree for every 35 feet. However, street trees offer more services when placed within the right-of-way between the curb and sidewalk. These services include buffering pedestrians from traffic, reducing the heat island effect of streets, and encouraging good maintenance of a tree lawn that can infiltrate stormwater.
Parking area landscaping (95-11.I.3)	The ordinance contains a good provision requiring one landscaped parking island per every ten stalls. Other townships also include the provision that a minimum percentage, say 10% or 15%, of the interior of each parking lot must be green space. The ordinance should also encourage depressed islands by specifically mentioning them or offering sample specifications. Also, the screening buffer required for parking lots is only 15ft wide. This could be expanded to 25 feet.
Curbs (95-10)	It is not clear where the township requires curb installation. Therefore, the township should include a description of where curbs are mandatory and where applicants can use roadside swales and bioretention areas to convey and store runoff.
Stormwater basin landscaping	No standards exist for acceptable landscaping and planting with stormwater detention basins. The township should consider creating a list of appropriate species and vegetation management in basins.

Zoning Ordinance

Section	Recommendations to Encourage Commercial Redevelopment
Impervious cover limit	In most districts, the ordinance does not provide an impervious cover limit. Although the code regulates runoff and land use intensity using other factors, an impervious cover limit is helpful for developers to understand the character and intensity of use envisioned within the district. An impervious cover limit establishes a strong starting point from which the township can guide growth and redevelopment. From this limit, the township can begin to think about offering incentives to property owners to reduce existing impervious cover or add infiltration capability.
B1 District	The ordinance caps the maximum building cover for a residential use in the B1 District at 70%. First, this is a very high limit that could be reduced. Second, there is no limit to either building or impervious cover for any other use in this district. The township should measure the actual impervious cover in the district and establish a limit to help meet the goal of reducing stormwater runoff. A good option is to set a limit somewhat lower than the existing impervious cover percentage and then offer incentives to reduce paving.
Parking stall size (114.134.C)	For commercial uses, the township sets a parking stall size at 10 feet by 20 feet. To reduce impervious cover by 20% per stall, an acceptable stall size within parking lots is 9 feet by 18 feet.
Shared parking (114-134)	The ordinance mentions shared parking but gives no specific provisions about how property owners can enter into such an agreement. To encourage more shared parking in the township, the ordinance should include provisions describing how many stalls can be shared, which uses can share stalls, and distances between shared stalls and the building it serves.

WHITPAIN RECOMMENDATIONS

Subdivision & Land Development Ordinance

Section	Recommendations to Encourage Commercial Redevelopment
Street trees (129-43.C.1)	The ordinance requires street trees at 50-foot spacing. This should be reduced to 40 feet. The township should also consider permitting street trees to be planted within the ROW to enable greater shading, traffic calming, and installation of tree lawns between sidewalks and cartway for better impervious disconnection.
Parking lot landscaping (129-43.C.4)	The ordinance provides no limit to the number of continuous stalls permitted before requiring a landscaped area. A typical standard requires one landscaped island per 12 stalls. These islands should be depressed and landscaped to allow for bioretention.

Zoning Ordinance

Shared parking is allowed only by special exception. It should be permitted by right if certain conditions are met. The township should review the recent land developments in the C, C-1, and S-C Districts to determine if the impervious cover limits still apply or if they could be reduced.



Parking lot bioretention basin to manage stormwater

UPPER DUBLIN RECOMMENDATIONS

Subdivision & Land Development Ordinance

Section	Recommendations to Encourage Commercial Redevelopment
Curbs (212-19)	The township has an excellent standard addressing curbs, specifically describing how an applicant may receive a waiver and not install curbs in order to better treat stormwater.
Parking lot green space (212-32.E)	The township standard requires that if a parking lot is greater than 5,000 square feet, at least 10% of the interior area must be landscaped. The township may wish to consider reducing this threshold to 2,000 square feet as in other townships.
Street trees (212-32.F)	The ordinance requires street trees at 50-foot spacing. This should be reduced to 40 feet. The township should also consider permitting street trees to be planted within the ROW to enable greater shading, traffic calming, and installation of tree lawns between sidewalks and cartway for better impervious disconnection.
Parking islands (212-32.F)	The ordinance permits up to 15 parking spaces in a row before requiring a planting island. Reducing this ratio to one stall to every 12 stalls would add more shading to parking lots and add more opportunities for small bioretention areas.

Zoning Ordinance

Section	Recommendations to Encourage Commercial Redevelopment
CR and SC Districts	Both of these districts have impervious cover caps of 75%. This is a high limit. The township should consider lowering this limit to 65%, then allow applicants to build to 75% impervious cover conditional upon providing enhanced stormwater management.
Shared parking (255-136)	Shared parking is only permitted by special exception. A hearing in front of the Zoning Hearing Board is an added expense that many landowners would rather avoid. To encourage shared parking, the township should consider permitting it by right if the applicant meets specific conditions listed in the ordinance.
Overlay districts	The Emerging Issues Comprehensive Plan developed in 2009 states that the village overlay districts are not resulting in the type of redevelopment the township envisions. If the township updates these overlays to promote redevelopment, they should find a balance between attracting development while addressing poor stormwater management from the past. If the township is intent on permitting high intensity uses in these districts, they may wish to consider increasing height limits or facilitating regional stormwater management in the district instead of permitting high impervious cover.

“The most important part of the consensus process is first exploring the differences.”

Roundtable Participant
June, 2009

WHITEMARSH RECOMMENDATIONS

Zoning Ordinance

Section	Recommendations to Encourage Commercial Redevelopment
Parking ratio	The Flourtown Erdenheim Vision Plan plan recommends that the number of parking stalls per area of each use should be reduced. The township should conduct a study to determine the actual parking needs of some select uses to see if the ordinance requires too much parking.
CR District (116-95)	Parking standards in this district require 20% more parking than expected during peak hour. This standard seems excessive and should be replaced with provisions that permit greater flexibility for the developer such as holding some land in reserve for future parking if needed.
VC District	This district encourages shared access by allowing an impervious increase of 10%. If the township continues to update this district, they should consider replacing this incentive with an option to decrease parking requirements.
Development requirements for CR and SC Districts (116-103.D and 116-117)	Both of these commercial districts include provisions to guide the township and the applicant when reviewing a proposal. These include provisions that development should be harmonious with community character and be consistent with the Comprehensive Plan. The township should consider adding language to these sections that encourages stormwater management practices that address unmanaged runoff.
Shared parking	The township should consider enabling shared parking arrangements between landowners to reduce required parking. In redevelopment projects, parking stalls no longer required could be redeveloped as green space or new commercial space.
Parking in reserve	Many townships include a reserve parking provision to give property owners more flexibility when developing or redeveloping a site. The township should consider permitting a property owner to keep as much as 50% of required parking stalls graded, but undeveloped as lawn, until the need for that parking area arises.



Common occurrence of flooding in the Wissahickon Watershed



Commercial Redevelopment Discussion

These recommendations focus on parking, impervious cover, and landscaping rather than stormwater management ordinances itself. Revisions to the MS4 general permit are pending, and development of an Act 167 Plan will begin in the fall of 2010. Both of these regulatory programs may require that each township adopt a new stormwater management ordinance with more specific requirements for retaining at least the first inch of rainfall on site on any new development. The practices recommended here will help to achieve that requirement.

The new MS4 general permit (PAG-13) will require that municipalities in the Wissahickon watershed (as in each TMDL watershed) take pro-active measures to reduce the existing loads of sediment in the Creek. Controls on new development merely reduce the increase in runoff and will not generally count toward the required TMDL reduction. Pervious pavement, structured parking, cisterns and green roofs all become more realistic options when compared to the cost of new stormwater basins to reduce runoff volume.



Underpass obstructed by high waters due to stormwater runoff



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The Pennsylvania Environmental Council (PEC) protects and restores the natural and built environments through innovation, collaboration, education and advocacy.

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